

IN THE CLAIMS

1. (currently amended) A current sensor for an apparatus, said current sensor comprising a conductor comprising ~~a slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~said slit~~ said aperture, said conductor is configured to generate a magnetic field having a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an output.

2. (original) An apparatus in accordance with Claim 1 wherein said apparatus comprises a residential electricity meter.

3. (original) A current sensor in accordance with Claim 1 wherein said magnetic field has a pre-determined spatial dependence.

4. (original) A sensor in accordance with Claim 1 wherein said Hall effect device output is substantially insensitive to magnetic fields having other than the pre-determined shape.

5. (canceled)

6. (original) A sensor in accordance with Claim 1 wherein said Hall effect device output comprises a non-linear component.

7. (original) A sensor in accordance with Claim 5 wherein said plurality of Hall effect devices are separated by a pre-determined distance.

8. (original) A sensor in accordance with Claim 1 wherein said magnetic field comprises at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction.

9. (original) A sensor in accordance with Claim 1 wherein said magnetic field comprises at least two magnetic field components having the same direction.

10. (previously presented) A current sensor for an apparatus comprising a conductor comprising ~~a slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~said slit~~ said aperture, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from

said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an output.

11. (previously presented) A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising a ~~slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~said slit~~ said aperture, said conductor is configured to generate a magnetic field having a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an output.

12. (original) An electricity meter in accordance with Claim 11 wherein said electricity meter comprises a residential electricity meter.

13. (original) An electricity meter in accordance with Claim 11 wherein said magnetic field has a pre-determined spatial dependence.

14. (original) An electricity meter in accordance with Claim 11 wherein said Hall effect device output is insensitive to magnetic fields having other than the pre-determined shape.

15. (canceled)

16. (original) An electricity meter in accordance with Claim 11 wherein said Hall effect device output comprises a non-linear component.

17. (original) An electricity meter in accordance with Claim 15 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

18. (original) An electricity meter in accordance with Claim 11 wherein said magnetic field comprises at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction.

19. (original) An electricity meter in accordance with Claim 11 wherein said magnetic field comprises at least two magnetic field components having the same direction.

20. (previously presented) A residential electricity meter comprising a voltage sensor and a current sensor, said current sensor comprising a conductor comprising a ~~slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~said slit~~ said aperture, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an output.

21. (previously presented) A method for sensing voltage and current in a residence, said method comprising:

providing an electricity meter comprising:

a voltage sensor; and

a current sensor, wherein the current sensor comprises a conductor comprising ~~a slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~the slit~~ the aperture, wherein the conductor is configured to generate a magnetic field having a pre-determined shape, and each Hall effect device is configured to detect the pre-determined shape and generate an output.

22. (original) A method in accordance with Claim 21 wherein providing an electricity meter comprises providing a residential electricity meter.

23. (original) A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field having a pre-determined spatial dependence.

24. (original) A method in accordance with Claim 21 further comprising providing a Hall effect device output comprising a non-linear component.

25. (canceled)

26. (original) A method in accordance with Claim 25 wherein said plurality of Hall effect devices are each separated by a pre-determined distance.

27. (original) A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from the first direction.

28. (original) A method in accordance with Claim 21 further comprising providing a conductor configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction the same as the first direction.

29. (previously presented) A method for sensing voltage and current in a residence, said method comprising:

providing a residential electricity meter comprising:

a voltage sensor; and

a current sensor, said current sensor comprising a conductor comprising ~~a slit~~ an aperture therethrough and a plurality of Hall effect devices inserted at least partially within ~~said slit~~ said aperture, said conductor is configured to generate a magnetic field comprising at least a first magnetic field component having a first direction and a second magnetic field component having a second direction different from said first direction, and a pre-determined shape, each said Hall effect device configured to detect said pre-determined shape and generate an output.